NUREG-0274
Five in a Series of
Five Reports

CATALOG OF PHYSICAL PROTECTION EQUIPMENT

Book 3
Volume VI. Automated Response Components

The MITRE Corporation
for
U. S. Nuclear Regulatory Commission

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Book 3

Volume VI. Automated Response Components

Wolf Haberman, and Others

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Reports in the Series

1. Guidelines for the Development of a Methodology for Measuring Level of Effectiveness of Physical Protection Facilities at Fixed-Site Facilities
   NUREG-0270

2. Physical Protection Equipment Study: Final Report
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4. Guide for the Evaluation of Physical Protection Equipment
   NUREG-0273

5. **Catalog of Physical Protection Equipment**
   NUREG-0274

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ABSTRACT

A catalog of commercially available physical protection equipment has been prepared under MITRE contract AT(49-24)-0376 for use by the U. S. Nuclear Regulatory Commission (NRC). Included is information on barrier structures and equipment, interior and exterior intrusion detection sensors, entry (access) control devices, surveillance and alarm assessment equipment, contraband detection sensors, automated response equipment, general purpose displays and general purpose communications, with one volume devoted to each of these eight areas. For each item of equipment the information included consists of performance, physical, cost and supply/logistics data. The entire catalog is contained in three notebooks for ease in its use by licensing and inspection staff at NRC.

PREFACE AND ACKNOWLEDGEMENTS

The Catalog of Physical Protection Equipment presents information on currently used or currently available physical protection equipment that could be employed to safeguard special nuclear materials. The primary source of information was the responses of manufacturers and vendors to requests for literature and data, unless otherwise noted, and as discussed in the Final Report (NUREG-0271, MTR 3458). All equipment listed in the Catalog has been screened in accordance with the following general criteria, and only items meeting one or more of these criteria have been included:

- Equipment is commercially available off-the-shelf;
- Equipment is currently in use at commercial nuclear facilities licensed or to be licensed by NRC;
- Equipment is applicable for use at nuclear facilities licensed or to be licensed by NRC;
- Equipment can operate in the environmental conditions present at nuclear facilities;
- Equipment is not designed solely or primarily for residential use.

The final report describes the methodology and rationale used to create the Catalog of Physical Protection Equipment. Individuals seeking background information concerning the Catalog are directed to that report.

The Catalog of Physical Protection Equipment was edited and reviewed by W. L. Parlee; W. Haberman had overall responsibility for its preparation. Inputs to the Catalog were prepared by the following individuals, and their contributions are gratefully acknowledged:

Volume I.

L. I. Egelson	Sections 1, 4, 5, 6, 7, 8, 9, 10
R. G. Hansen	Sections 2, 3

Volume II.

J. L. Conway	Section 1
R. D. Cotell	Section 2
Z. Kohorn	Sections 11, 14
R. N. Lawson	Sections 4, 5, 7, 9, 12
J. O. Runkle	Sections 6, 8, 10, 13, 15
G. O. Sauermann	Section 3

Volume III.

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Volume IV.

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Volume V.

A. J. Graff

Volume VI.

R. N. Lawson

Volume VII.

C. E. Dolberg

Volume VIII.

D. Stone

D. G. Willard

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Section 3. Code Combination and Card Locks

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SIREN AND BELL CONTROLS

Siren and bell controls are designed to activate auditory signaling devices, usually in the vicinity of an intrusion, to scare the intruder into fleeing and to attract personnel/security forces to the location of the intrusion. A siren control typically is an electronics module (usually a printed-circuit card), either self-contained or suitable for mounting inside a security control panel enclosure. A loudspeaker capable of handling the driver output characteristics (power, frequency, impedance) must also be provided in an enclosure suitable for the environment. A bell control is usually a simple switch closure, provided either by an alarm security control panel relay closure or by a sensor with a normally open (NO) switch configuration (e.g., a pressure mat) and a latching relay. No operator intervention is required.

Installation considerations for siren and bell controls fall into two groups, the first relating to the method of providing the triggering signals, the second relating to the control and either the siren or the bell. If triggering signals from equipment external to the automated response device (sensors and alarm controls) are to be relied on, selection of the triggering signal must ensure that the intruder will generate those signals when entering the protected area. Automated response devices with self-contained sensors may offer more installation flexibility, since their coverage parameters may be optimized for each location instead of relying on existing sensors or sensor zones. For example, when installing a bell control triggered by a single pressure mat dedicated to the bell control, the mat may be placed at the specific location desired. In the case of a bell control triggered from a sensor zone containing pressure mat and additional sensors, extra triggering signals may be produced by the additional sensor, thus creating a higher nuisance activa-

tion rate. Devices which include built-in sensors must be evaluated component by component (e.g., sensor, communications) using procedures suitable for each.

Locations of siren or bell controls are typically chosen based on considerations of device security, wiring installation flexibility and security, and requirements for location of the siren or bell so that the intended audience can hear the signal. Since the controls are usually very small, they can be conveniently located near, or preferably inside, the security alarm control panel, or inside the bell or siren enclosure. Wiring is usually mounted inside conduit or reinforced cable to hinder tampering attempts. Some devices also offer line supervision circuitry that will automatically activate the auditory alarm if tampering is detected. Consideration should also be given to the properties of the siren or horn itself. Specifically, location, audio frequency and sound pressure level should be consistent with the environment (e.g., background noise levels, weather conditions) to ensure that auditory alarms from sirens or horns will be suitable.

SIREN AND BELL CONTROLS

Manufacturer Adcor Electronics
349 Peachtree Hills N.E.
Atlanta, Ga. 30305
(404) 261-0245

Model SD-30-FS

Reference Evaluation Guide Procedure No. VI-1.A NRC Identification No.

NARRATIVE DESCRIPTION

The Model SD-30-FS Siren Driver is intended to drive one 30W/4ohm or two 15W/8ohm speakers. The Siren Driver is actuated by a switch closure of a sensor alarm circuit, and can produce a dual tone (fixed or warble) excitation. The sensor alarm circuit is not a part of the unit. A 15W/8ohm speaker, Model PA-15-R, and a tamperproof speaker housing, fitted for tamper switches, are available as options.

PERFORMANCE DATA

Probability of Correct Response: Information not available.

False Alarm Rate: Information not available.

Nuisance Alarm Rate: Information not available.

Sensitivity: Information not available.

Response Mechanism: Switch closure activates Siren Driver to produce acoustic output tone(s) in a speaker.

Coverage—Range/Area/Volume: A sound volume level of 114 dB is produced at 10ft (3.1m) from the speaker in free air when used with the Model PA-15-R speaker and with a 12V dc input to the Siren Driver.

Response Duration: Continuous.

Response Delay: Negligible.

Resistance to Spoofing and Tampering: Wires into the Siren Driver and between the Siren Driver and speaker are not supervised and thus, are vulnerable. Wires should be placed in conduit. The speaker has an optional tamperproof housing which can be fitted with tamperswitches.

Indoor/Outdoor Operation: Siren Driver, indoor only: Speaker, indoor or outdoor.

Temperature: Information not available.

Humidity: Information not available.

Other Environmental Characteristics: Information not available.

Interface: Input: Switch closure; switched 6 or 12V dc may also be used.
Output: One 30W/4ohm speaker,
Two 15W/8ohm speakers.

PHYSICAL DATA

Size:	Driver: Approximately 5x5x1.5in (12.7x12.7x3.8cm). Speaker/Housing: Approximately 15x15x15in (38.1x38.1x38.1cm).
Weight:	Driver: Under 1lb (0.45kg). Speaker/Housing: Approximately 30lb (9kg).
Construction:	Driver: Small circuit card with metal cover. Speaker/Housing: Metal louvered box.
Power(Primary/Secondary):	6 or 12V dc; no back-up power.
Emplacement:	Wall mounted, brackets with screw mounts.

SUPPLY/LOGISTICS DATA

Documentation and Training:	Manuals are available, training not required.
Parts and Repairs:	Commercially available.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	One year warranty.
Government or Professional Standards:	None.
Lead Time:	Available off-the-shelf.

COST DATA

Unit Acquisition Cost:	Driver: $24; Speaker: $22; Housing: $12.
Unit Installation Cost:	Under $100.
Training Cost:	None.
Maintenance Cost:	Negligible.
Operation Cost:	Information not available.

NOTES

Audio volume level is quite high for enclosed areas or for anywhere near speaker axis.

INSTALLATIONS

SIREN AND BELL CONTROLS

Manufacturer Signal-U Manufacturing Co.
250 Railroad St.
Canfield, OH 44406
(216) 533-5535

Model "Attendore"

Reference Evaluation Guide Procedure No. VI-1.A NRC Identification No.

NARRATIVE DESCRIPTION

The "Attendore" consists of a rubber mat containing a pressure-sensitive transducer that activates a chime (included) that can be located up to 40ft (12m) away. The device is intended to signal the arrival of visitors to a protected area.

PERFORMANCE DATA

Probability of Correct Response:	Information not available.
False Alarm Rate:	Information not available.
Nuisance Alarm Rate:	Information not available.
Sensitivity:	Information not available.
Response Mechanism:	Pressure transducer located inside rubber mat activates chime when mat is stepped on.
Coverage—Range/Area/Volume:	Pressure mat covers an area of 36x27in (91.4x68.6cm).
Response Duration:	Chime sounds for about 2 seconds.
Response Delay:	Under 1 second.
Resistance to Spoofing and Tampering:	Effectively none; the mat can be readily avoided. The wires for signal and power are unsupervised and should be placed in conduit. The power connection is a standard electrical 2-prong plug.
Indoor/Outdoor Operation:	Indoor only.
Temperature:	Information not available.
Humidity:	Information not available.
Other Environmental Characteristics:	Information not available.
Interface:	Standard power connector (2-prong plug).

PHYSICAL DATA

Size:	Rubber mat: 36x27x½in (91.4x68.6x1.2cm). Chime: 8x12x4in (20.3x30.5x10.2cm).
Weight:	Rubber mat: 14lb (6.4kg). Chime: 4lb (1.8kg).
Construction:	The chime is contained in a metal cabinet with a cloth front panel.
Power (Primary/Secondary):	120V ac, 60Hz; No backup power.
Emplacement:	The rubber mat rests on the floor at the entrance to a protected area; the chime mounts on the wall within 40ft (12m) of the mat.

SUPPLY/LOGISTICS DATA

Documentation and Training:	None required.
Parts and Repairs:	Not effective to repair; replace when defective.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	Guaranteed free of defects in workmanship or material.
Government or Professional Standards:	None.
Lead Time:	Stock to 30 days (depends on dealer inventory).

COST DATA

Unit Acquisition Cost:	$49.50.
Unit Installation Cost:	$3 to $30 (to install chime and route wire).
Training Cost:	None.
Maintenance Cost:	Negligible.
Operation Cost:	Information not available.

NOTES

Available with 6in gong ($14) or 8in gong ($16) for louder chime.

INSTALLATIONS

AUTOMATIC ILLUMINATION CONTROLS

Automatic illumination controls are designed to activate lights, usually in the vicinity of an intrusion, to scare the intruder into fleeing and to attract personnel/security forces to the location of the intrusion. These devices include a light source and an activation circuit -- usually a relay driver circuit and a relay intended for external activation, although built-in sensors could be employed. Self-contained batteries may be supplied.

Installation considerations for automatic illumination controls fall into two groups, the first relating to the method of providing the triggering signals, the second relating to the control itself. If triggering signals from equipment external to the automatic illumination control (sensors and alarm control panels) are to be relied on, selection of the triggering signal must ensure that the intruder will generate those signals when entering the protected area. No operator intervention is required. Illumination controls with built-in sensors for device activation may offer more installation flexibility, since the sensor coverage parameters may be optimized for each location instead of relying on existing sensors or sensor zones. Devices which include built-in sensors must be evaluated component by component (e.g., sensor, communications) using procedures suitable for each.

Locations of illumination controls may be chosen based on considerations of device security, wiring installation flexibility and security, and requirements for location of the illumination control so that the lighting it provides will be appropriate. In particular, locations should be chosen so that an intruder will not be able to block the light or destroy the device. If devices are available with line supervision, so that line tampering results in activation of the devices, these should be considered for use. Wiring mounted in

conduit or armored cable will hinder tampering. Consideration should also be given to the properties of the lighting source itself (e.g., ambient lighting levels, orientation and location of the source) to ensure that the response will be suitable to the environment.

AUTOMATIC ILLUMINATION CONTROLS

Manufacturer	Scientific Dimensions, Inc. 308 McKnight, N.E. Alberquerque, NM 87102 (505) 247-9180
Model	Intrutek MMA-1
Reference Evaluation Guide Procedure No. VI-2.A	NRC Identification No.

NARRATIVE DESCRIPTION

The Intrutek MMA-1 consists of a portable, self-contained flashing light with an associated horn alarm unit. It is intended to frighten off intruders and alert personnel in the vicinity that an intrusion has occurred. The Intrutek MMA-1 is activated by an external sensor alarm circuit (not included). Power is supplied by rechargeable batteries.

PERFORMANCE DATA

Probability of Correct Response:	Information not available.
False Alarm Rate:	Information not available.
Nuisance Alarm Rate:	Information not available.
Sensitivity:	Information not available.
Response Mechanism:	Switch closure causes flashing light and audible "yelping" horn.
Coverage—Range/Area/Volume:	Flashing light can be seen for several hundred yards (or meters) at night. Horn has a sound level of 110 dB at 5ft (1.5m).
Response Duration:	Response is for two minutes, then automatic reset occurs.
Response Delay:	None — essentially instantaneous response.
Resistance to Spoofing and Tampering:	Cutting triggering cable causes an alarm response; there are no tamper-switches to prevent unalarmed access to the unit.
Indoor/Outdoor Operation:	Outdoor.
Temperature:	Information not available.
Humidity:	Information not available.
Other Environmental Characteristics:	Information not available.
Interface:	Input; Switch closure, switched 12V dc also may be used.

PHYSICAL DATA

Size:	Approximately 10x10x10in (25.4x25.4x25.4cm).
Weight:	Approximately 20lb (9kg).
Construction:	Aluminum waterproof case.
Power (Primary/Secondary):	12V rechargeable battery.
Emplacement:	Portable unit that may be attached to walls, fences, etc. using clamps, screws, etc.

SUPPLY/LOGISTICS DATA

Documentation and Training:	Manuals are available. No training necessary.
Parts and Repairs:	Commercially available.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	One year warranty, excluding batteries.
Government or Professional Standards:	None.
Lead Time:	Available off-the-shelf.

COST DATA

Unit Acquisition Cost:	$243.75.
Unit Installation Cost:	Negligible.
Training Cost:	None.
Maintenance Cost:	Negligible.
Operation Cost:	Information not available.

NOTES

Audio volume level of horn is quite high for enclosed areas or for anywhere near the speaker axis.

INSTALLATIONS

AUTOMATIC PHOTOGRAPH CONTROLS

Automatic photograph controls are designed to detect an intruder and take a series of photographs, using available lighting, to be used in identifying the intruder. They do not provide immediate security alarm data. A self-contained sensor (acoustic, etc.) can be incorporated in the design to detect intruder motion and to trigger a camera that takes pictures at a slow rate (typically two frames per second) on a film magazine that must then be processed. A self-contained battery may be supplied to provide installation flexibility. Several properties of the device are constrained by the characteristics of the sensors. For acoustic devices these include susceptibility to environmental noise and to wind motion (generally limiting usefulness to indoor locations), inability to detect targets moving tangentially to the ultrasonic beam, maximum range limitation due to the power handling limitations of the ultrasonic transmitter, maximum azimuth coverage limitations due to the size and wavelength of the ultrasonic transmitter, and masking of the intruder by large objects in the coverage volume such as a desk and file cabinets. Other sensor types could also be used. A fuller treatment of properties of sensor characteristics may be found in Volume II (Intrusion Detection Components).

The camera is not usually provided with an integral source of scene illumination; hence external lighting is required for adequate film exposure. Both the sensor coverage pattern and the camera field-of-view should be consistent with the intended coverage volume (typically a room about 20 ft (6m) square in which the automatic photograph control is mounted in one corner near the ceiling). The units should be mounted in a place inaccessible to an intruder, so as to preclude the possibility of such tampering techniques as covering the camera lens with a heavy cloth or knocking the control module

with a pole to change its field of view both of which would make the camera ineffective. There is no protection against individuals wearing a mask to preclude identification, hiding behind objects or carrying an obscuring shield.

AUTOMATIC PHOTOGRAPH CONTROLS

Manufacturer CFI Camera Division,
Shirmer-National Co.
100 Portland Ave.
Bergenfield, N.J. 07621
(201) 385-1200

Model 700 MA

Reference Evaluation Guide Procedure No. VI-3.A NRC Identification No.

NARRATIVE DESCRIPTION

The 700MA emits an ultrasonic beam which covers an area (range up to 20ft (6m)). When an intruder enters the protected area, the beam is interrupted, activating a movie camera. The camera takes two 16mm frames per second. Film is stored in a 2000 frame magazine. Film used is Kodak Spec. 447, soft rolls.

PERFORMANCE DATA

Probability of Correct Response: Information not available.
False Alarm Rate: Information not available.
Nuisance Alarm Rate: Information not available.
Sensitivity: Information not available.
Response Mechanism: Ultrasonic sensor activates camera.
Coverage—Range/Area/Volume: Camera has 16mm focal length lens.
Response Duration: One frame every ½ second for a total of 15 minutes (assuming a fresh magazine).
Response Delay: Adjustable; "Fast" adjustment corresponds to one frame every ½ second, "Slow" adjustment corresponds to one frame every 1 to 1½ seconds.
Resistance to Spoofing and Tampering: Very slow motions may escape detection; no tamper-switches are used.
Temperature: Information not available.
Humidity: Information not available.
Other Environmental Characteristics: Information not available.
Interface: None.

PHYSICAL DATA

Size: 11½x7¾ x8½in (29.2x19.7x21.6cm).
Weight: Approximately 1 lb (4.5kg).
Construction: Wooden box with cloth front.
Power (Primary/Secondary): Self-contained 12V battery (10mA current consumption). Batteries are not rechargeable and must be replaced every few weeks.
Emplacement: Wall mounted.

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SUPPLY/LOGISTICS DATA

Documentation and Training:	Manuals supplied with device. No training necessary.
Parts and Repairs:	Film processing available through Schirmer-National Film Labs, 90 Portland Ave., Bergenfield, N.J.; electronics can be repaired in the field.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	Warranty through dealers.
Government or Professional Standards:	None.
Lead Time:	Available off-the-shelf.

COST DATA

Unit Acquisition Cost:	$572, (film cartridges $23).
Unit Installation Cost:	$10 to $100.
Training Cost:	None.
Maintenance Cost:	Not available.
Operation Cost:	Battery replacement required every few weeks, cost $50 to $100 per year.

NOTES

Some of the information contained herein was obtained from a company representative during a telephone conversation.

INSTALLATIONS

AUTOMATIC DIALERS

Automatic telephone dialers are designed to dial a preprogrammed telephone number and deliver a prerecorded message over existing telephone lines to an instrument at the receiving end of the telephone line. This instrument may be either a conventional telephone handset (in which case a person must answer the ringing telephone, listen to, and understand the prerecorded message) or a special-purpose receiving device that includes an alarm signal (auditory, visual, or both), a display of alarm data and a printer for long-term hardcopy logs.

Automatic dialers are triggered from security alarm control panels which receive alarm data from zones of sensors. Messages transmitted by these units are intended to alert someone, typically local law enforcement agency (LLEA) personnel, who will make some form of response. The messages are prerecorded and intended to convey enough information to ensure that the anticipated response will in fact occur. The recording mechanism is a magnetic tape configured either as a commonly available tape cartridge or cassette or as an open tape loop. The telephone number and message can usually be programmed at the facility using a tape programmer available from each dialer company. Some dialers provide for multiple messages, depending on which alarm zone provides the trigger. These units are said to have a multi-channel capability; they can be used, for example, to report messages requiring fire and/or LLEA responses. The channels are assigned on a priority basis, so that if two alarms occur simultaneously, the message relating to the high-priority channel will be sent first, and then the lower-priority channel message will be sent.

Dialers usually have an automatic re-dial feature, so that the dialer will repeatedly (usually up to a preset number of attempts) place a call to a busy number. To minimize lost time, the telephone

dialer should be programmed to dial an in-coming line that is reserved only for high-priority business. Dialers also should be equipped with a line seizure feature, when available, that will prevent a call on an extension to the dialer's outgoing line from inhibiting dialer action. An anti-jam feature, breaking the connection of an incoming call to the dialer line at the moment a trigger signal is received, should also be used if available. These three options are intended to minimize spoofing attempts against the dialer. Some dialers also permit a listen-in feature so that the call recipient can hear, through a microphone built into the dialer, any sounds, such as might be caused by an intruder, in the vicinity of the dialer. Dialer options are listed in the Notes section of each sheet.

Dialers are usually mounted in reinforced enclosures with locks and tamper alarms, and usually offer line supervision on the trigger input line to increase tamper resistance. However, the connection between the dialer and the intended call recipient may not be resistant to tamper attempts unless special procedures, such as mounting internal lines in conduit and guarding access to telephone lines outside the facility, are employed.

The utility of a telephone dialer also depends upon the characteristics of several associated items. The telephone line used is most often a non-conditioned dial-up line which may have varying levels of background noise. The recipient of a dialer voice message has to understand it quickly (it might not be repeated), and the messages sent to central station monitors must be read correctly by an operator. In both cases a correct response must then be effected. Since the dialer operation could result in a response by local law enforcement agency personnel, the false activation and nuisance alarm rates of this equipment must be considered. Care must be taken to ensure that installed equipment is acceptable by local law enforcement agencies for connection to their lines or end instruments.

AUTOMATIC DIALERS

Manufacturer Adcor Electronics
349 Peachtree Hills N.E.
Atlanta, GA 30305
(404) 261-0245

Model DAT-2

Reference Evaluation Guide Procedure No. VI-4.A NRC Identification No.

NARRATIVE DESCRIPTION

This device is intended to automatically dial a pre-recorded telephone number after being tripped by an external stimulus. The device can be programmed to enunciate the telephone number from which the call is placed, as well as the account number and alarm condition. Additionally, contacts are available for local alarm activation. This device is intended to be used with the Adcor Central Station Receiver.

PERFORMANCE DATA

Probability of Correct Response: Depends upon the quality of the telephone line and of the message recording, and upon the noise environment at the receiver. Verified quantitative data not available.

False Alarm Rate: Minimal; dual transmission (digital and voice backup) is provided. Verified quantitative data not available.

Nuisance Alarm Rate: Depends upon the design of the external sensor loop. "Wrong numbers" can be received at Central Station and thereby tie it up, but the transmitter will retransmit until the call is completed, and the Central Station will not output an alarm until it receives a valid transmission. Verified quantitative data not available.

Sensitivity: Information not available.

Response Mechanism: Switch activation causes telephone call initiation to Central Station Receiver over dial-up line; Central Station Receiver provides audible alarm and print-out of alarm data.

Coverage—Range/Area/Volume: Depends upon the design of the external sensor loop.

Response Duration: Typically 10 seconds.

Response Delay: Depends upon telephone network, typically under 10 seconds.

Resistance to Spoofing and Tampering: Depends upon the design of the external sensor loop. "Wrong numbers" could be used to spoof the receiver. Enclosures should be equipped with tamper alarms. Telephone line could be cut. Magnetic tape loops may be vulnerable to magnetic fields unless located in steel enclosure.

Indoor/Outdoor Operation: Indoor only.

Temperature: Information not available.

Humidity: Information not available.

Other Environmental Characteristics: Information not available.

Interface: Switch or relay (open or closed) for interface with sensor alarm circuitry. Conventional dial-up telephone line interface for communications link.

PHYSICAL DATA

Size:	Approximately 8x12x3in (21x31x7.6cm).
Weight:	Under 5lb (2.3kg).
Construction:	Printed-circuit card in a metal frame (intended for installation in a cabinet or case).
Power(Primary/Secondary):	12V dc; built-in nickel-cadmium batteries for 48 hours operation.
Emplacement:	Mounted inside locked metal cabinet (not supplied).

SUPPLY/LOGISTICS DATA

Documentation and Training:	Manuals are available. Training not required since manuals are self-explanatory (especially in recording of messages).
Parts and Repairs:	Commercially available electronics; tape transport from vendor.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	Typically one year (negotiable) parts and labor.
Government or Professional Standards:	Matched for telephone line.
Lead Time:	Variable (typically off-the-shelf).

COST DATA

Unit Acquisition Cost:	$192 for DAT-2, $1,500 for Central Station Receiver.
Unit Installation Cost:	Under $50 (exclusive of sensors and sensor control panel).
Training Cost:	None.
Maintenance Cost:	Negligible.
Operation Cost:	Information not available.

NOTES

Options:	Multiple messages, Auto-redial, Line seizure, Listen-in.

INSTALLATIONS

AUTOMATIC DIALERS

Manufacturer	Adcor Electronics 349 Peachtree Hills N.E. Atlanta, GA 30305 (404) 261-0245
Model	DAT-6
Reference Evaluation Guide Procedure No. VI-4.A	NRC Identification No.

NARRATIVE DESCRIPTION

This device will automatically send (over a dedicated, pre-connected telephone line) alarm data (i.e., a message code) from up to six input channels. Each channel can service a sensor loop. The device employs a parity check technique to insure that correct messages are received; a garbled or incomplete message will be resent. This device is intended to be used with the Adcor Central Station Receiver.

PERFORMANCE DATA

Probability of Correct Response:	High; parity check tests for complete messages. Verified quantitative data not available.
False Alarm Rate:	Low; special codes are used. Verified quantitative data not available.
Nuisance Alarm Rate:	Depends upon the design of the external sensor loop. Verified quantitative data not available.
Sensitivity:	Information not available.
Response Mechanism:	Switch-activation causes message to be sent over dedicated line to receiver, which sounds audible alarm and provides printout of alarm condition.
Coverage—Range/Area/Volume:	Depends upon the design of the external sensor loop.
Response Duration:	Typically 10 seconds.
Response Delay:	Minimal; dedicated line used.
Resistance to Spoofing and Tampering:	Depends upon the design of the external sensor loop. Enclosures should be equipped with tamper alarms. Telephone line could be cut.
Indoor/Outdoor Operation:	Indoor only.
Temperature:	Information not available.
Humidity:	Information not available.
Other Environmental Characteristics:	Information not available.
Interface:	Normally-open (N.O.) contacts (up to six channels) for interface with sensor alarm circuitry. Direct-couple (or through coupler) to telephone line for interface with communication links.

PHYSICAL DATA

Size:	15¼x11¼x4¼in (39x29x11cm).
Weight:	9lb (4.1kg).
Construction:	Locking steel cabinet.
Power (Primary/Secondary):	12V ac self-contained batteries for up to 100 hours of standby.
Emplacement:	Wall mount.

SUPPLY/LOGISTICS DATA

Documentation and Training:	Manuals are available. No special training requirements.
Parts and Repairs:	Commercially available.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	One year warranty.
Government or Professional Standards:	Telephone line compatible.
Lead Time:	Variable (typically off-the-shelf).

COST DATA

Unit Acquisition Cost:	$170 each ($155 for 10, up); $1,500 for Central Station Receiver.
Unit Installation Cost:	Under $50.
Training Cost:	None.
Maintenance Cost:	Negligible.
Operation Cost:	Information not available.

NOTES

Options: Multiple message, Auto re-dial, Line seizure, Anti-jam, Listen-in.

INSTALLATIONS

AUTOMATIC DIALERS

Manufacturer	Adcor Electronics 349 Peachtree Hills, N.E. Atlanta, GA 30305 (404) 261-0245
Model	NW 122

Reference Evaluation Guide Procedure No. VI-4.A NRC Identification No.

NARRATIVE DESCRIPTION

This device will automatically dial a pre-recorded telephone number and transmit a pre-recorded message of up to six minutes duration over the telephone line to another telephone where someone may listen to the message. Both dial pulses and voice message are recorded on a magnetic tape loop.

PERFORMANCE DATA

Probability of Correct Response:	Depends upon the quality of the telephone line and of the message recording, and upon the noise environment at the receiver. Verified quantitative data not available.
False Alarm Rate:	Depends upon the false alarm rate of the external sensor loop. Verified quantitative data not available.
Nuisance Alarm Rate:	Depends upon the design of the external sensor loop. "Wrong numbers" can tie up receiver. Verified quantitative data not available.
Sensitivity:	Information not available.
Response Mechanism:	Switch closure activates recording mechanism which dials phone number and transmits message.
Coverage—Range/Area/Volume:	Depends upon the design of the external sensor loop.
Response Duration:	Up to six minutes.
Response Delay:	Depends upon telephone network, typically under 10 seconds.
Resistance to Spoofing and Tampering:	Depends upon the design of the external sensor loop. "Wrong numbers" could be used to spoof the receiver. Enclosures should be equipped with tamper alarms. Telephone line could be cut.
Indoor/Outdoor Operation:	Indoor only.
Temperature:	Information not available.
Humidity:	Information not available.
Other Environmental Characteristics:	Information not available.
Interface:	Switch closure for interface with sensor alarm circuitry. Conventional dial-up telephone line interface for communications link.

PHYSICAL DATA

Size:	15¼x11¼x4¼in (39x29x11cm).
Weight:	Approximately 10lb (4.5kg).
Construction:	Locking steel cabinet.
Power (Primary/Secondary):	12V dc; battery pack available.
Emplacement:	Wall mount.

SUPPLY/LOGISTICS DATA

Documentation and Training:	Manuals available. Training not required since manuals are comprehensive.
Parts and Repairs:	Commercially available electronics; tape transport from vendor.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	Two year warranty.
Government or Professional Standards:	Matched for dial-up telephone lines.
Lead Time:	Variable (typically off-the-shelf).

COST DATA

Unit Acquisition Cost:	Approximately $150.
Unit Installation Cost:	Under $50 (exclusive of sensor loops).
Training Cost:	None.
Maintenance Cost:	Expected to be negligible (two year warranty).
Operation Cost:	Information not available.

NOTES

Options: Multiple message, Line seizure, Listen-in.

INSTALLATIONS

AUTOMATIC DIALERS

Manufacturer Adcor Electronics
349 Peachtree Hills N.E.
Atlanta, GA 30305
(404) 261-0245

Model NW 322 AC

Reference Evaluation Guide Procedure No.VI-4.A NRC Identification No.

NARRATIVE DESCRIPTION

This device provides a security control function and a voice dialer in a single cabinet. The security control function monitors sensors (either normally open or normally closed) and activates the dialer when a sensor is activated. The security control can be remotely accessed by a key-activated switch. Contacts for local alarms are provided. A siren driver for either steady or warbled tones is available. The voice dialer will allow up to five calls to the same or different numbers.

PERFORMANCE DATA

Probability of Correct Response: Depends upon the quality of the telephone line and of the message recording, and upon the noise environment at the receiver. Verified quantitative data not available.

False Alarm Rate: Depends upon the false alarm rate of the external sensor loop. Verified quantitative data not available.

Nuisance Alarm Rate: Depends upon the design of the external sensor loop. "Wrong numbers" can tie up receiver. Verified quantitative data not available.

Sensitivity: Information not available.

Response Mechanism: Switch operation activates recorder mechanism which dials phone number and transmits message.

Coverage—Range/Area/Volume: Depends upon the design of the external sensor loop.

Response Duration: Up to six minutes (up to five phone messages).

Response Delay: Depends upon telephone network, typically under 10 seconds.

Resistance to Spoofing and Tampering: Depends upon the design of the external sensor loop. "Wrong numbers" could be used to spoof the receiver. Enclosures should be equipped with tamper alarms. Telephone line could be cut.

Indoor/Outdoor Operation: Indoor only.

Temperature: Information not available.

Humidity: Information not available.

Other Environmental Characteristics: Information not available.

Interface: Switch activation (either open or closure) for interface with sensor alarm circuitry. Conventional dial-up telephone line interface for communications link.

PHYSICAL DATA

Size: 15¼x11¼x4¼in (39x29x11cm).

Weight: 14lb (6.3kg).

Construction: Locking steel cabinet.

Power (Primary/Secondary): 12V ac, 0.9A; built in rechargeable battery (12V dc).

Emplacement: Wall mount.

SUPPLY/LOGISTICS DATA

Documentation and Training:	Manuals available. Training not required since manuals are comprehensive.
Parts and Repairs:	Commercially available electronics; tape transport from vendor.
Reliability:	MTBF not available.
Maintainability:	MTTR not availble.
Warranty Information:	One year warranty.
Government or Professional Standards:	Matched for dial-up telephone lines.
Lead Time:	Variable (typically off-the-shelf).

COST DATA

Unit Acquisition Cost:	$205 each; $170 each in quantities of 24 to 99.
Unit Installation Cost:	Under $50 (exclusive of sensor loops).
Training Cost:	Negligible.
Maintenance Cost:	Negligible.
Operation Cost:	Information not available.

NOTES

Options: Multiple message, Line seizure, Anti-jam, Listen-in.

INSTALLATIONS

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AUTOMATIC DIALERS

Manufacturer	Ademco 105 Eileen Way Syosset, N.Y. 11791 (516) 921-6700	Johnson Controls, Inc. 507 E. Michigan St. Milwaukee, WI. 53201 (414) 276-9200	Universal Security Instruments, Inc. 2829 Potee St. Baltimore MD 21225 (301) 355-9000
Model	612	KG-7101	TD-4

Reference Evaluation Guide Procedure No. VI-4.A NRC Identification No.

NARRATIVE DESCRIPTION

These dialers accept switch-closure of 5 to 12V dc input signals on two channels, dial pre-programmed telephone numbers, and send pre-recorded messages to whoever answers the dialed telephone. Tape cartridges of five or ten minute length (5 only on TD-4) can be ordered already programmed, or can be field-programmed by using the optional ADEMCO 618, Universal 1118, or an optional unit available with the KG-7101. A local test speaker is available; pre-recorded messages can be played through it.

PERFORMANCE DATA

Probability of Correct Response: Depends upon the quality of the telephone line and of the message recording, and upon the noise environment at the receiver. Verified quantitative data not available.

False Alarm Rate: Depends upon the false alarm rate of the external sensor loop. Verified quantitative data not available.

Nuisance Alarm Rate: Depends upon the design of the external sensor loop. "Wrong numbers" can tie up receiver. "Abort" feature allows 20 seconds to inhibit response after activating dialer, so that nuisance alarms can be minimized; however, this function can disconnected in the field. Verified quantitative data not available.

Sensitivity: Information not available.

Response Mechanism: Switch-closure or 5 to 12V dc level initiates dial-up and message transfer over existing telephone lines.

Coverage—Range/Area/Volume: Depends upon the design of the external sensor loop.

Response Duration: Depends on tape programming, up to 10 minutes (5 minutes on TD-4).

Response Delay: Depends upon telephone network, typically under 10 seconds.

Resistance to Spoofing and Tampering: Depends upon the design of the external sensor loop. "Wrong numbers" could be used to spoof the receiver. Enclosures should be equipped with tamper alarms. Telephone line could be cut. Spoofing can be minimized when anti-jam and line seizure options are used. Susceptibility of tape to magnetic fields is not known.

Indoor/Outdoor Operation: Indoor only.

Temperature: Information not available.

Humidity: Information not available.

Other Environmental Characteristics: Information not available.

Interface: Switch closure or a 5 to 12V dc signal for interface with each input channel. Conventional dial-up telephone line interface for communications link.

PHYSICAL DATA

Size:	12x12x4in (30.5x30.5x10.2cm).
Weight:	Approximately 10lb (4.5kg).
Construction:	Locking steel case.
Power (Primary/Secondary):	110V ac 50/60Hz; backup batteries available as follows: (1) 6V battery (all 3), (2) Rechargeable ac/dc battery pack Ademco No. 96/option on Johnson unit, (3) Dialer/coupler rechargeable unit provides 6V to dialer and 18V for telephone company coupler — Ademco 616/Johnson option.
Emplacement:	Wall mount.

SUPPLY/LOGISTICS DATA

Documentation and Training:	Installation instructions furnished with item; no training necessary.
Parts and Repairs:	Tape unit custom made by ADEMCO; electronics are open, printed circuit construction suitable for field repair.
Reliability:	MTBF not available.
Maintainability:	MTTR not availble.
Warranty Information:	Warranted through distributors, although each warranty may be negotiable.
Government or Professional Standards:	UL-listed.
Lead Time:	Typically under 48 hours.

COST DATA

Unit Acquisition Cost:	Not available.
Unit Installation Cost:	$10 to $100.
Training Cost:	None.
Maintenance Cost:	Depends on distributor.
Operation Cost:	Information not available.

NOTES

Options:	Multiple messages, Line seizure, Anti-jam.

INSTALLATIONS

AUTOMATIC DIALERS

Manufacturer	Ademco 165 Eileen Way Syosset, N.Y. 11791 (516) 921-6700
Model	Digital Dialer System (includes Models 660, 661, 662, 665)

Reference Evaluation Guide Procedure No. VI-4.A NRC Identification No.

NARRATIVE DESCRIPTION

The ADEMCO Digital Dialer System consists of the Model 662 Digital Dialer, the Model 660 Receiver, the Model 661 Printer and the Model 665 Power Transfer Unit. A switch closure of 6 to 12V dc input initiates the 662 to dial a pre-programmed number over existing lines and transmit a message (pre-programmed; depending on alarm situation) to the 660 receiver for printout on the 661. The 662-660 system incorporates "handshake" techniques to insure tolerance to line-jamming attempts.

PERFORMANCE DATA

Probability of Correct Response:	Depends upon the quality of the telephone line and of the message recording, and upon the noise environment at the receiver. Verified quantitative data not available.
False Alarm Rate:	Depends upon the false alarm rate of the external sensor loop. Verified quantitative data not available.
Nuisance Alarm Rate:	Depends upon the design of the external sensor loop. "Wrong numbers" can tie up receiver. "Abort" feature allows 15 seconds to inhibit response after activating dialer, so that nuisance alarms can be minimized, however this feature can be disconnected in the field. Verified quantitative data not available.
Sensitivity:	Information not available.
Response Mechanism:	Switch closure or 6 to 12V dc level initiates dial-up and message transfer over existing telephone lines.
Coverage-Range/Area/ Volume:	Depends upon the design of the external sensor loop.
Response Duration:	Display of alarm data on 660 receiver lasts until reset, or new message is received.
Response Delay:	Depends upon telephone network, typically under 10 seconds.
Resistance to Spoofing and Tampering:	Depends upon the design of the external sensor loop. "Wrong numbers" could be used to spoof the receiver. Enclosures should be equipped with tamper alarms. Telephone line could be cut.
Indoor/Outdoor Operation:	Indoor only
Temperature:	Information not available.
Humidity:	Information not available.
Other Environmental Characteristics:	Information not available.
Interface:	Switch closure or a 6 to 12V dc signal for interface with input (Model 662 Dialer). Conventional dial-up telephone line interface for communications links between Dialer and Receiver (Model 660). Dedicated line between Receiver and Printer (Model 661).

PHYSICAL DATA

Size:

Model	Dimensions
660	10⅜x6⅞x8⅜in (26.4x17.5x21.9cm)
661	8⅞x6⅞x12¾in (22.5x17.5x32.4cm)
662	12x12x4in (30.5x30.5x10.2cm)
665	7½x12x3¼in (19.1x30.5x8.3cm)

Weight: Approximately 10lb (4.5kg), each module.

Construction: Models 662 and 665, locking steel boxes; Models 660 and 661, steel cabinets.

Power (Primary/Secondary): 110V ac, 50/60 Hz; Model 662 has self-contained 12V dc battery backup. Models 660 and 661 receive backup battery power from Model 665.

Emplacement: Models 660 and 661, desk or shelf mount; Models 662 and 665, wall mount.

SUPPLY/LOGISTICS DATA

Documentation and Training: Installation instructions provided; no training required. General burglar alarm courses are available.

Parts and Repairs: Ship back to factory center, although field repair is possible.

Reliability: MTBF not available.

Maintainability: MTTR not available.

Warranty Information: Warranted usually through distributors. Warranties may be negotiable.

Government or Professional Standards: UL-listed.

Lead Time: Typically under 48 hours.

COST DATA

Unit Acquisition Cost: Not available.

Unit Installation Cost: $10 to $100.

Training Cost: None.

Maintenance Cost: Depends on distributor warranty (anticipated minimal).

Operation Cost: Information not available.

NOTES

Options: Multiple messages, Auto re-dial, Line seizure, Anti-jam.

INSTALLATIONS

AUTOMATIC DIALERS

Manufacturer	Detectron Security Systems Inc. P.O. Box 313A, Bay St., Sag Harbor, N.J. 11963 (516) 725-2600
Model	1600
Reference Evaluation Guide Procedure No. VI-4.A	NRC Identification No.

NARRATIVE DESCRIPTION

The Model 1600 is an automatic dialer which transmits voice messages over leased telephone lines. Tape cartridges containing messages to be transmitted are inserted in the unit. Messages are sent over two separate channels with up to four separate telephone receivers per channel. A different message can be sent to each channel. Activation of a sensor alarm circuit causes the unit to dial the numbers and transmit the message(s).

PERFORMANCE DATA

Probability of Correct Response:	Depends upon the quality of the telephone line and of the message recording, and upon the noise enviroment at the receiver. Verified quantitative data not available.
False Alarm Rate:	Depends upon the false alarm rate of the external sensor loop. Verified quantitative data not available.
Nuisance Alarm Rate:	Depends upon the design of the external sensor loop. "Wrong numbers" can tie up receiver. Verified quantitative data not available.
Sensitivity:	Information not available.
Response Mechanism:	Switch or relay activation initiates dial-up and message transfer over existing telephone lines.
Coverage-Range/Area/ Volume:	Depends upon the design of the external sensor loop.
Response Duration:	Information not available.
Response Delay:	Depends upon telephone network, typically under 10 seconds.
Resistance to Spoofing and Tampering:	Depends upon the design of the external sensor loop. "Wrong numbers" could be used to spoof the receiver. Enclosures should be equipped with tamper alarms. Telephone line could be cut.
Indoor/Outdoor Operation:	Indoor only.
Temperature:	Information not available.
Humidity:	Information not available.
Other Environmental Characteristics:	Information not available.
Interface:	Switch or relay for interface with sensor circuitry. Conventional dial-up telephone line interface for communications link.

PHYSICAL DATA

Size:	7x7x4 (17.7x17.7x10.2cm.).
Weight:	6lb (2.7kg.).
Construction:	16 gauge steel cabinet.
Power (Primary/Secondary):	110V ac or 12V dc, 300mA; no battery back-up.
Emplacement:	Wall mount.

SUPPLY/LOGISTICS DATA

Documentation and Training:	Installation manual available, training not required.
Parts and Repairs:	Information not available.
Reliability:	MTBF not available.
Maintainability:	MTTR not available.
Warranty Information:	One year warranty.
Government or Professional Standards:	None.
Lead Time:	Off-the-shelf.

COST DATA

Unit Acquisition Cost:	$93.50.
Unit Installation Cost:	Information not available.
Training Cost:	Information not available.
Maintenance Cost:	Information not available.
Operation Cost:	Information not available.

NOTES

Options: Multiple message.

INSTALLATIONS

AUTOMATIC DIALERS

Manufacturer	Dytron, Inc. 241 Crescent St. Waltham, MA 02154 (617)891-9029
Model	XL-5000, FA-2010, EC-2010, D-206, D-212

Reference Evaluation Guide Procedure No. VI-4.A NRC Identification No.

NARRATIVE DESCRIPTION

These devices are intended to select one of two channels, dial a pre-recorded number and then transmit a pre-recorded message. Each channel may store up to five messages. Typically one channel would be used for fire reporting, and the other for intrusion. Each channel may be selected either by switch closure or application of a 5 to 15V dc level. Channel 2 has precedence over Channel 1 for emergency reporting. A test speaker is available to ensure proper operation; this can be used to sound a local alarm (not available in D-206, D-212). The XL-5000 is ac powered with dc standby. FA-2010 is battery-powered. EC-2010 is battery-powered and has a control panel function built in. D-206 and D-212 are battery-powered (6 and 12V respectively) dialer modules only; they are intended for inclusion in existing alarm control cabinets. Test functions, controls, and indicators are included in XL-5000, FA-2010, and EC-2010.

PERFORMANCE DATA

Probability of Correct Response:	Depends upon the quality of the telephone line and of the message recording, and upon the noise environment at the receiver. Verified quantitative data not available.
False Alarm Rate:	Depends upon the false alarm rate of the external sensor loop. Verified quantitative data not available.
Nuisance Alarm Rate:	Depends upon the design of the external sensor loop. "Wrong numbers" can tie up receiver (only the XL-5000 has an "Abort" feature to inhibit response and minimize nuisance alarms). Verified quantitative data not available.
Sensitivity:	Information not available.
Response Mechanism:	Switch closure or voltage level causes dial-up of telephone and transmission of pre-recorded message.
Coverage-Range/Area/ Volume:	Depends upon the design of the external sensor loop.
Response Duration:	As required to complete Message, typically 10 seconds to 1 minute.
Response Delay:	Depends upon telephone network, typically under 10 seconds.
Resistance to Spoofing and Tampering:	Depends upon the design of the external sensor loop. Modules can be equipped with line-seizure, -disconnect, and -command. "Wrong numbers" could be used to spoof the receiver. Enclosures should be equipped with tamper alarms. Telephone line could be cut.
Indoor/Outdoor Operation:	Indoor only.
Temperature:	Information not available.
Humidity:	Information not available.
Other Environmental Characteristics:	Information not available.
Interface:	Switch closure or a 5 to 15V dc signal for interface with sensor circuitry. Conventional dial-up telephone line interface (direct, if allowed by telephone company, or by coupler — see Note 2) for communications link.

PHYSICAL DATA

Size/Weight:

Model	Dimensions	Weight
XL-5000	10x11x5.25in (25.4x25.4x15.3cm)	10.75lb (4.9kg)
EC-2010, FA-2010	6.75x6.75x5.25in (17.1x17.1x13.3cm)	6.25lb (2.8kg)
D-206, D-212	5.19x2.38x3.87in (13.2x6.0x9.8cm)	1¼lb (0.6kg)

Construction: Models XL-5000, EC-2010, and FA-2010, locking steel cabinets; Models D-206 and D-212, open metal chassis bases, intended for mounting in existing cabinets.

Power (Primary/Secondary): Model XL-5000, 12V ac/6V battery; Model EC-2010, two 6V batteries; Model FA-2010, one 6V battery; Model D-206, one 6V battery; Model D-212, one 12V battery.

Emplacement: Models XL-5000, EC-2010, and FA-2010, wall mount; Models D-206 and D-212, mount in existing cabinets.

SUPPLY/LOGISTICS DATA

Documentation and Training: Installation data furnished with unit; no installation/operation training is required.

Parts and Repairs/ Maintainability: Tape drive unit replacements from factory; other components can be field-repaired or factory-repaired. Built-in test functions aid maintainability.

Reliability: MTBF not available.

Maintainability: MTTR not available.

Warranty Information: One year.

Government or Professional Standards: Submitted for FCC approval for direct phone connection without coupler.

Lead Time: Typically one week.

COST DATA

Unit Acquisition Cost: XL-5000, $136; EC-2010, $160; FA-2010, $102; D-206, D-212, $75.70. See Note 3 for cartridge and programmer costs.

Unit Installation Cost: Estimated $10 to $100 (except D-206, D-212 intended for incorporation into larger systems).

Training Cost: None.

Maintenance Cost: Information not available.

Operation Cost: Information not available.

NOTES

1. Some information herein was obtained by a telephone conversation with a company representative.
2. Dytron Couplers for telephone line interface:
   CIU-4 for all models, except XL-5000, when battery powered.
   CIU-5 for all models when powered by rechargeable power packs.
   CIU-6 for XL-5000 [illegible] powered.
3. Tape cartridges are available [illegible] minute blank, or 6 minute pre-recorded formats. Programmers can be ordered (P-5000 for XL-5000; P-[illegible] others) to program blank tapes in the field.

Model Number	Tape and Price				Programmer and Price	
	Blank		Prerecorded			
XL-5000	T-1 / T-6	$2.70	TP-6	$10.	P-5000	$135.
Others	C-1 / C-6	$4.10	CP-6	$10.	P-2000	$81.

4. **Options:** Multiple message, Line seizure, Anti-jam.

INSTALLATIONS